

National Park Service
US Department of the Interior

Death Valley National Park
Death Valley, California



Death Valley National Park

Environmental Assessment

Rehabilitation and Improvements
Badwater Visitor Use Area
May 9, 2002



Public Comment must be received by Close of Business June 10, 2002

Please submit comments to:

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A. Purpose and Need

This environmental assessment considers actions to protect resources at Badwater Basin, to improve parking and circulation at this heavily visited site, and to provide universal access to the basin for visitors with disabilities.

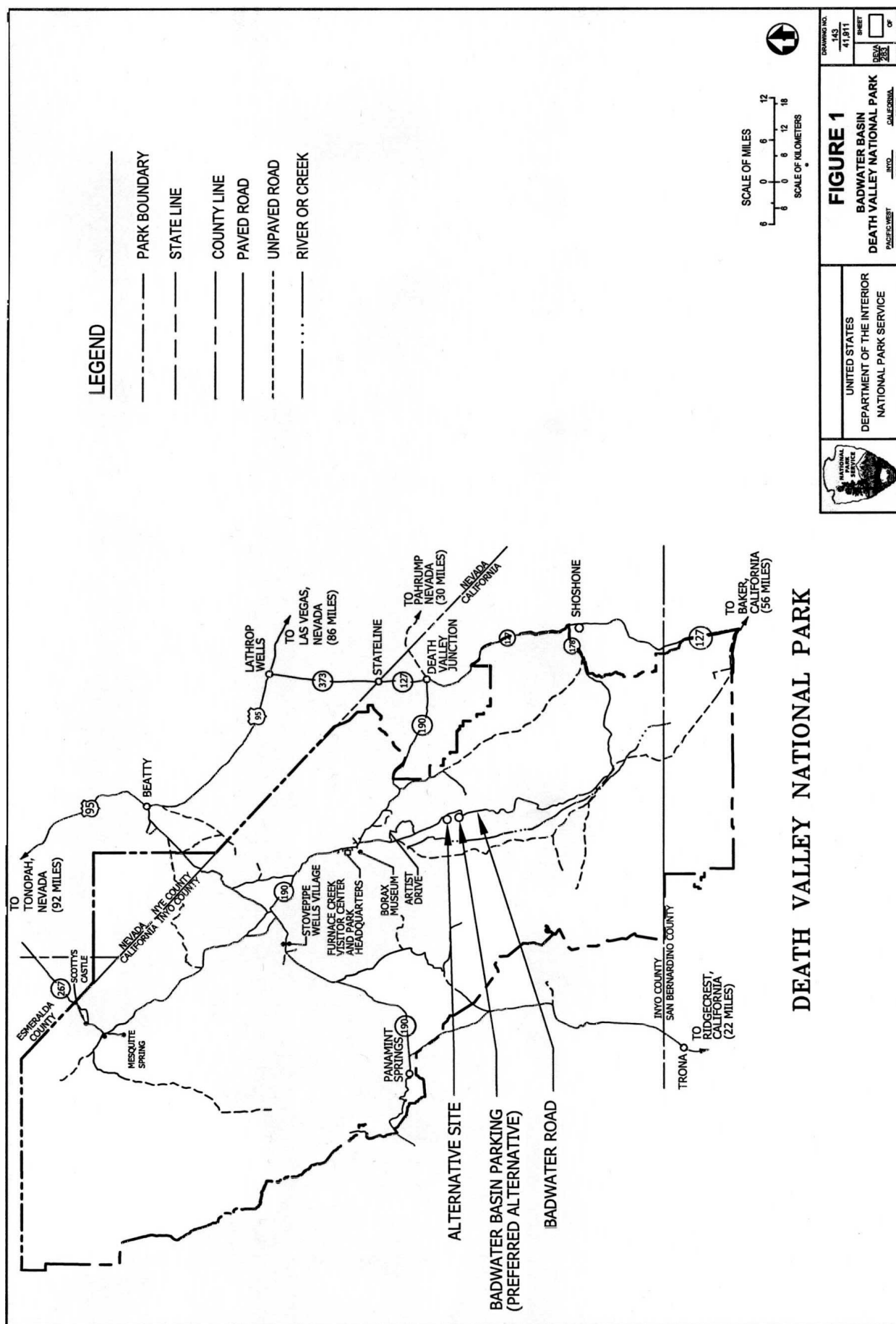
This project is located in Death Valley National Park (See Figure 1). The Badwater Basin project site is located 17 miles south of Highway 190 on the Badwater Road. The site is the most popular day-use site in the park with annual visitation of over 800,000 people. In this area visitors focus on being near the lowest point in the Western Hemisphere (-282 feet) juxtaposed with views across the basin, to the highest point in the park, Telescope Peak (11,049 feet). The area around the pools is only a few feet above the actual lowest spot, which is located out in the basin a few miles west of the site. Visitors also experience the salt pan and spring fed pools. The site provides one of the most scenic and popular photographic opportunities in the park.

High visitor use in the Badwater Basin site has resulted in impacts to the area's resources including compaction of the salt crust, visitors driving into the pools, and loss of vegetation and habitat for the endemic Badwater snail.

Located at Badwater and adjacent to the road are three spring fed pools. These pools contain permanent surface water, unusual in the Badwater Basin. Trails in and around the site are undefined, resulting in visitor intrusion onto the vulnerable pool edges and large areas of the salt pan. These pools contain the endemic Badwater snail (*Assiminea infima*). This snail is found only within the park at Badwater, Cottonball Marsh, and Travertine and Nevares Springs (Sada, 1995). The public use of the site has degraded the pools and the snails' habitat. In addition to snail habitat impacts, undirected use has worn a wide foot trail out into the salt pan (see Figure 2, 3, and 4 for historical and contemporary photo comparison of views out into the salt pan). Although the impacts of public use of the salt pan are reversible (unlike the possible irreversible loss of the snail's habitat), the scene has changed from vistas offering a vast, unworldly like wilderness, to views of a salt pan that has the appearance of a well-trodden short-cut across a vacant lot.

The current minimal interpretation at the site means the visitor is unaware of the significance of the resources and the potential impacts of their visit. In addition to insufficient interpretation, the existing parking lot is inadequate for the current level of use. The layout is confusing with insufficient parking for passenger vehicles and inadequate turning radii for buses and large recreation vehicles.

This environmental assessment considers a proposed action and alternative actions that would reduce the impacts to the resources at Badwater Basin, enhance the



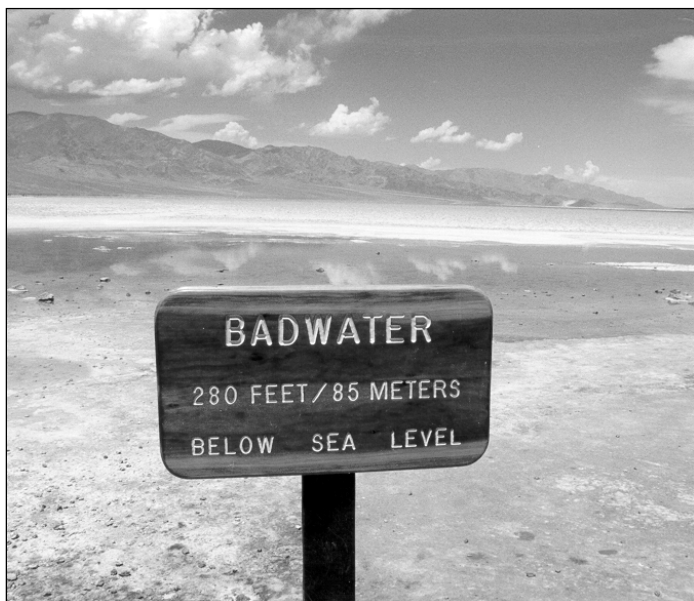


Figure 2- Current Condition at pools
(note lack of crust)



Figure 3- 1930's Condition at pools (note crust
up to pool edge)



Figure 5- Recent View of pools (note white areas where crust has been compacted by foot traffic including paths around pools & into the basin, note parallel ruts in pool from vehicles)

visitors' understanding of this special place, improve access for visitors with disabilities, and provide an appropriately sized and safe parking area.

In August 2001 the Badwater Road Rehabilitation project environmental assessment was released for public comment and in September 2001 a Finding of No Significant Impacts document was signed by the Pacific West Regional Director. This project will resurface the Badwater Road from its junction at Highway 190 near Furnace Creek, south for 17 miles to the Badwater Basin visitor area. This road project would be constructed concurrently with this proposed visitor use area project.

B. Alternatives

There are three alternatives: the No Action Alternative, the preferred action, and the establishment of a new visitor site about 2 miles north of the existing site.

B.1 No Action Alternative

The visitor area would remain as is. The pools and their surrounding vegetation and rare snail habitat would continue to deteriorate. Visitors would continue to leave the site unaware of much of the significance of this place. The crowded, functionally obsolete parking lot would remain unchanged.

B.2 Environmentally & NPS Preferred Alternative

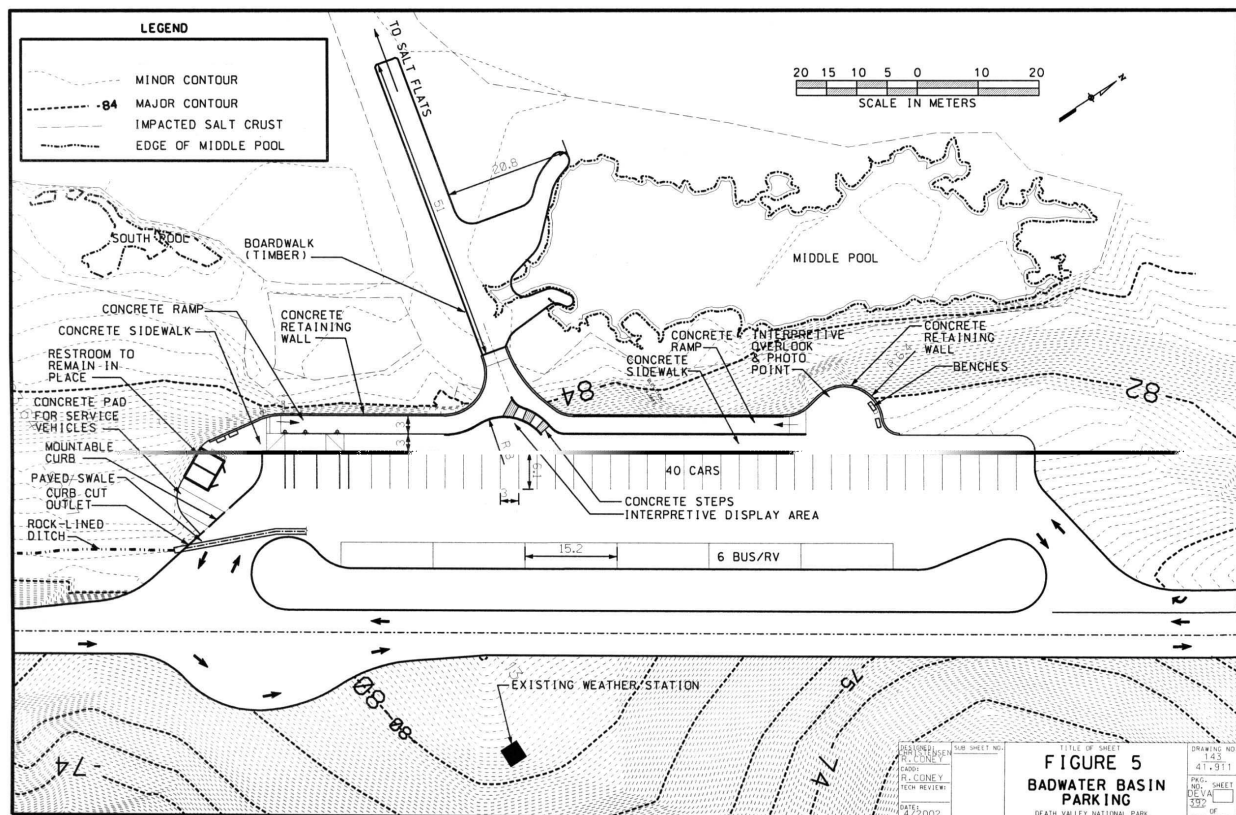
The present visitor area would remain as the focal point for visitation to the lowest point within the Western Hemisphere. The existing facilities would be reconstructed and the area's resources would receive more protection from inadvertent public damage (See Figure 5). Random parking results in the inefficient use of limited space and creates hazards for pedestrians.

The existing facilities include a 14,800 square foot paved and adjacent 16,000 square foot gravel parking lots for approximately 36 cars and 6 buses. These parking areas would be regraded, the old pavement surface recycled, and a new 28,420 square foot parking area for 40 cars and 6 buses or RVs would be built in the same area. Reserved parking spaces and an accessible route to the restroom, exhibits, pool and salt pan would be provided for visitors with disabilities. The Badwater road immediately adjacent to the parking area would be realigned to allow better access to the new parking area. A concrete sidewalk, viewing areas, ramps, and boardwalk would be built to provide public access to the pools and salt flat. The sidewalk and viewing areas above the boardwalk would include the existing vault toilet, plus new interpretive signs, benches, and photo points. Two ramps and a stairway from the sidewalk would join a boardwalk on the basin floor that would be constructed to provide public viewing of the middle pool and salt flats. The ramp and the boardwalk would be wide enough to allow two wheelchairs to pass each other. The boardwalk

would be built within the presently disturbed area, elevated from one to two feet above the salt pan, and supported by footings. There would be a wide viewing area around the middle pool that would offer protection to pool and its inhabitants while offering the public better views of this resource. The boardwalk would continue beyond the pool, out about 100 feet into the salt pan. The boardwalk would be about 13 feet wide at this location. The existing weather station would be relocated within the same general area. The existing comfort station (vault toilets) is in good condition and would remain in place. New interpretive signs would be fabricated and installed above and down on the boardwalk. Additional signs would encourage the visitor to protect the salt pan by minimizing their impacts to the area. The abandoned vault toilets to the east of the parking area would be removed and the site cleaned up.

The proposed visitor use facilities, including sidewalks and ramps would be about 48,380 square feet (sq ft). This area includes the parking lot's footprint, its concrete sidewalks and ramps and the boardwalk. The boardwalk would cover 5,040 sq ft of salt pan. The improved visitor area would require that the roadway be shifted to the east by about 40 feet. This would entail the disturbance of an additional 44,990 sq ft of desert land and hillside. The hillside would be regraded and contoured to match existing grades with a maximum slope of 2:1 from its present elevation of -250 feet down to the present road surface of about -265 feet.

Figure 5- Preferred Alternative Design



The parking lot would be designed and constructed so as to contain and direct runoff (or drainage) away from the pools. It would have a reverse crown or shallow drainage swale that would carry drainage runoff from the north to the south end of the parking lot. From there a concrete ramp outlet would collect the runoff and divert it away from the Badwater pools into a swale and retention basin to be constructed within an existing disturbed area south of the restroom. The swale and retention basin would consist of filter fabric, rock edging, and native soil to blend inconspicuously with the landscape. The swale and basin would catch sediment and allow the runoff to percolate slowly into the alluvial ground rather than entering directly into the basin.

The construction for this proposal would begin in mid-November 2002 and take about 180 days to complete.

B.3 New Visitor Site Alternative

The proposed new visitor site is about two miles north of the existing Badwater Basin visitor area. The site has been previously disturbed and is the current site of a sign pointing to Telescope Peak. The site shows obvious impacts of disturbance including a graded berm and little established vegetation. The elevations at this site are similar to those at the pools. This alternative would include the development of new facilities including a parking lot (spaces for 36 cars and 6 buses), restrooms, ramp to the basin, and interpretive signs. The existing visitor area at the Badwater pools would be removed and the area would be rehabilitated to begin its restoration to natural conditions. This alternative was developed to lessen the public impact to the resources at the Badwater pools while allowing the visitor to experience the Badwater Basin.

B.4 Rejected Alternatives

Other sites proposed as visitor areas with public parking and access to the Badwater Basin were considered as alternatives but rejected. These other locations were rejected because they were highly visible from the scenic overlook at Dante's View, they were within active alluvial fans and subject to periodic floods and debris flows, or because development would damage the wetlands in the basin.

Alternatives with a larger parking area were developed but it was determined that the construction would include excess amount of earth work and extreme alterations of the natural landscape inappropriate for a National Park.

C. Affected Environment

C. 1 Cultural Resources

An NPS archeologist surveyed the project site on February 26 and 27, 2002 and found no cultural resources.

C.2 Air Quality/Noise

Death Valley National Park is a Class II area under the Clean Air Act. Sections 118 and 176 of the Clean Air Act require federal facilities to comply with and conform to state air quality implementation plan requirements where an action could adversely affect air quality in the area classified as non-attainment. Areas classified as federal non-attainment are those that do not meet the National Ambient Air Quality Standards under the Clean Air Act. Areas classified as California state non-attainment are those that do not meet the state air quality standards under the California Clean Air Act. The project area is in the Great Basin Unified Air Pollution Control District. The district is classified as California State non-attainment for particulate matter (fine dust) less than ten microns in diameter (PM-10).

The ambient noise is very low except when it is windy. There is traffic noise adjacent to the road, but walking a few hundred feet west of the parking lot, the traffic noise becomes less and less detectable. A few times a day aircraft are seen and heard in the area.

C.3 Natural Resources

Vegetation. “Badwater basin is characterized by its harsh environment, a paucity of vegetation, and an uneven soil, composed mostly of sodium, calcium, and magnesium salts. Vegetation is absent from the center of the basin, which is completely covered by salt crust” (Sada, 1995). Vegetation is limited to several peripheral sites where alluvial soils provide suitable growing conditions (ibid.).

On February 28, 2002, the Badwater project site was surveyed for rare plants and unique plant communities. Due to a combination of visitor use causing soil compaction and salinity, the site is sparsely vegetated. No rare plants or unique plant communities were found. The only vascular plants observed were pickleweed (*Allenrolfea occidentalis*), desert holly (*Atriplex hymenelytra*), and ditch-grass (*Ruppia* sp.). Clumps of ditch-grass were seen floating in the surface water while pickleweed was found along the damp edges; and desert holly was observed in the surrounding uplands.

Pools and the Badwater snail. “Springs at Badwater are habitat for several species of plants and animals. Pickleweed (*Allenrolfea occidentalis*) dominates the vegetation.

All aquatic animals are invertebrates, mostly beetles and backswimmers. The most distinctive organism is the Badwater snail (*Assiminea infima*) that is endemic to Death Valley, but known only from (Death Valley National Park and its) Badwater, Cottonball Marsh, and Travertine and Nevares Springs in the Funeral Mountains. During 1994, D. Threlhoff (former DEVA biologist) estimated that the Badwater snail occupied at least 63 springs scattered over at least 37.5 ha (93 ac) in Cottonball Marsh. Cottonball Marsh is believed to support more Badwater snail habitat than any other locality (Sada, 1995).” The U. S. Fish and Wildlife Service and the State of California’s Department of Fish and Game have respectively listed this species as a species of special concern and as “Extremely Endangered”.

Sada’s report contains a number of historical photographs of the pools and he has compared them with photographs that he took in 1994. Some of these photographs are included in this document (see Figure 1 and 2). It is obvious from these photos that the area has changed.

Recent photographs show high-relief salt crust is no longer present east of the Middle Pool, that high-relief salt crust on the island (so prominent in early photographs) is now absent, and that water in the Middle Pool is spread over a wider area (ergo it is less confined). Differences in salt crust relief between historical and current conditions occur mostly east of Middle Pool, close to the parking lot where current public use is heaviest (Sada, 1995).

Other than the pools’ fauna, the wildlife in the area is limited to an occasional coyote crossing the salt pan and birds flying past the area.

C.4 Water Resources (Pools and Runoff)

Runoff from the existing parking lot enters the Badwater basin untreated. The pools are currently very near discharge point for the runoff.

C.5 Visitor Enjoyment

The site, with annual visitation of over 800,000, is the most popular interpretive site in the park. The park’s annual visitation is about 1,200,000. In this area visitors focus on being at the lowest point in the Western Hemisphere (-282 feet) juxtaposed with views across the basin, to the highest point in the park, Telescope Peak (11,049 feet). The site also provides one of the most scenic and popular photographic opportunities in the park. Within the parking areas the tight turns make maneuvering difficult for buses and large recreational vehicles. Signs indicating the fragility of the local environment are often not seen by the park visitors. When visitors venture out on the salt pan, most of them seem to travel a well-beaten path away from the parking lot. There is no interpretation beyond a few waysides in one corner of the lot. It seems that most visitors on the salt pan are looking for a destination (“the lowest point in the Western Hemisphere”) and they continue walking until it is apparent that there is

really no destination, only the experience. Visitors are often curious about the life they see in the pools, however only one interpretation sign exists about the snail or the other life and their curiosity has resulted in impacts to the sensitive salt crust and the edge of the pools.

C.6 Wilderness

Ninety five percent of Death Valley National Park is congressionally designated wilderness. The Badwater basin is a part of that wilderness. This portion of the park's wilderness area begins 200 feet west of the existing development.

D. Impacts

Methodology. Potential impacts were analyzed for their context, intensity, and duration. The definitions of impact terms used in this section are:

- No Impacts: No impacts are anticipated.
- Negligible: The impact is at the lower levels of detection.
- Minor: The impact is slight, but detectable.
- Moderate: The impact is readily apparent.
- Major: The impact is severely adverse or exceptionally beneficial.

Non-impairment. No action is allowed to “impair” national park resources or values, according to the NPS Organic Act of 1916 and NPS Director’s Order #55. An action could have some impact, even a measurable or significant impact, but “impairment” is strictly prohibited. This project, under either action alternative, would have temporary, small scale, site specific impacts (e.g., dust, safety) but would not impair national park resources or values on a long-term or large scale.

D.1 THE NO ACTION ALTERNATIVE

D.1.a Cultural Resources

The No-Action alternative would not impact any cultural resources. The park’s cultural resources would not be impaired by this alternative.

D.1.b Air Quality/Noise

No impacts are anticipated.

D.1.c Natural Resources

The salt crust in the vicinity of the pools would continue to be compacted. Some vegetation around pools has been eliminated as an apparent result of visitor’s walking

to view the pools. In addition to trampling vegetation, visitors have caused the banks to erode. The impacts of this trampling are expected to spread around the pool further impacting the vegetation and the snail habitat. If these banks were left undisturbed they would form an overhang, which would provide shading and a more tolerable microclimate for the snail. Without these overhanging banks the microclimate would be eliminated and it is likely that the snails would decline in numbers. Current facilities do not prevent vehicles from driving out of the parking area and into the pools. Several vehicles have become stuck while driving on the salt pan. This driving, along with the subsequent impacts required to remove the vehicles, have caused considerable damage to the pool and habitat. With the selection of this alternative park resources would eventually be impaired.

D.1.d. Water Resources (Pools and Runoff)

Runoff from the existing parking lot enters the Badwater basin untreated and very near the pools. There is no evidence that this runoff has harmed the area's vegetation or animal life or that it has significantly contributed to the sedimentation of the pools. Intuitively however, one would assume that this runoff situation is probably a negligible adverse impact but having the potential to cause severe adverse impacts by a major flow or an accidental spill of hazardous material that leaves the parking lot and reaches the pools untreated.

D.1.e Visitor Enjoyment

Upon leaving the site the visitor has had an opportunity to walk on the salt pan, take a photo, peer into the pools, and experience this unique environment. However, the visitor leaves without an understanding of the significance of this area. The facilities do not provide access to the restrooms, pools, or salt pan for visitors with disabilities. During peak visitation periods the parking lot is typically full.

D.1.e Wilderness

Thousands of people a year use this portion of Death Valley's wilderness. This level of use changes the appearance of the surface of the salt pan. The wilderness boundaries at this location are not marked. Most visitors probably do not realize that they are within a wilderness area. The wilderness area is presently receiving a moderate impact from visitor use.

D.2 THE ENVIRONMENTALLY & NPS PREFERRED ALTERNATIVE

D.2.a Cultural Resources

This alternative would not impact any cultural resources. The park's cultural resources would not be impaired by this project.

D.2.b Air Quality/Noise

Construction activities would create air emissions (dust and vehicle exhaust) and noise during the 180 days of construction. A contractor would perform the work. The contractor would be required to use a water truck and water spray to reduce fugitive dust from the construction area and to follow all local, state, and federal air pollution laws and regulation.

About 1,800 to 3,700 dump truck loads of asphalt and aggregate base for the parking lot would be needed. These trucks would produce some air pollution, as would the other construction vehicles used to grade the area and to apply the new surface. The selected contractor shall follow best management practices and be in compliance with the Great Basin Unified Air Pollution Control District's regulation in preventing dust and other air pollutants. All existing material from the developed footprint (parking lot, curbs, and roadway) would be reused on site. The hillside-excavated material would also be used in grading the new site. Any excavated material that exceeds this project's needs would be used in the concurrent 17 mile Badwater Road improvement project or elsewhere within the park.

Noise from the proposed short-term (180 days) construction activities would be noticeable to visitors in the immediate vicinity of the construction activity. Construction activities and associated noises would be restricted to daylight hours.

These impacts are considered to be short-term and therefore minor.

D.2.c Natural Resources

The park's wildlife and vegetation would not be impaired by the implementation of this alternative. The alternative itself is designed to reduce impacts to existing resources.

The contractor would pressure-wash all equipment before entering the park to prevent the introduction of exotic seeds. The park botanist would inspect and approve the source(s) of imported construction materials (sand, gravel, and rocks) to insure no importation of weeds into the park.

D.2.d Water Resources (Pools and Runoff)

The contractor would be required to take special precautions to protect the ecology of Badwater Springs and other open water areas along the Badwater Road from any

accidental construction related spills. Minor impacts to the salt pan would occur from the installation of boardwalk footings. The elimination of pedestrians from the salt pan in the vicinity of the pools would reduce impacts and allow the area to begin natural restoration. Runoff from the parking area, which currently drains untreated into the pools, would be percolated through alluvial material to the south of the parking area, thereby reducing impacts to the pools. No natural resources would be impaired with the implementation of this alternative.

D.2.e Visitor Enjoyment

The visitor experience would be enhanced as visitors would be better informed and resources would recover to a condition approaching what is seen in Badwater photos of the early 20th century (See Figures 3 and 4). The more regimented approach to visitor and resource management may elicit some complaints from returning visitors, but it is expected that with better information and a more pristine habitat to observe, most visitors would have a better and more positive experience than they have now.

Because the existing area is presently a developed site the proposed expanded parking lot, sidewalk, ramp, and boardwalk would not adversely affect the vistas. It is believed that less of the salt pan would be disturbed with the installation of the boardwalk and interpretive signs. Railing would be used to keep people on the walks and boardwalks. The boardwalk would allow disabled visitors better access to view the pool and travel onto the salt pan.

Traffic congestion and delays in arriving to and returning from Badwater Springs (20 minutes maximum) would be expected to occur during construction. The Badwater visitor use area would be closed to visitors for up to 90 days sometime between November 2002 and May 2003 during construction. Construction work would be restricted to daylight hours and would include weekend construction work as well. These impacts are temporary and considered minor.

D.2.f Wilderness

All portions of the development including the boardwalk and supporting piers would be constructed outside of wilderness. Because of the existing heavy use by visitors in the salt pan, including out into the nearby designated wilderness area, the proposed boardwalk would reduce the disturbance to the salt pan and enhance the wilderness character of the area. With proper signage that encourages visitors to stay on the boardwalk and with visitors' cooperation the salt pan should begin to experience less disturbance in the area around the pool. With limited use, the salt pan should recover to its early 20th century condition. The wilderness would remain open for cross-country hikers.

D.2.g Cumulative Impacts

The Badwater Road rehabilitation project is the only other project within the proposed action area. Noise, air emissions, and traffic congestion from the Badwater Road rehabilitation project would contribute to this proposed project's impacts. The cumulative impacts are considered to be minor.

D.2.h "Environmentally Preferred" Designation

This alternative is the environmentally preferred because it achieves the greatest reduction in impacts to the resources of the Badwater Basin. It protects the main pond edges from trampling so that the pond edge shelf can eventually reestablish and can provide improved habitat for the Badwater snail. It improves the development of an already developed area, rather than impacting a new site.

D.3 THE NEW VISITOR SITE ALTERNATIVE

D.3.a Cultural Resources

An archeological survey has not been done for this alternate site. The impacts on the park's cultural resources for this alternative are unknown.

D.3.b Air Quality/Noise

The air quality and noise impacts of this alternative would be the same as those described in Section D.2.b.

D.3.c Natural Resources

This alternative would direct park visitors to another portion of the Badwater Basin, an area with no pools and associated plant and animal life, and away from the Badwater Pools. The Badwater pool area would receive less public visitation. It is anticipated that this proposed change in visitor access location would reduce the damage to the pools, their habitat, and the snail.

The natural resources in the vicinity of the new site would be moderately impacted by the new development. The new facilities would be larger than the area previously disturbed resulting in additional impacts to the salt pan and vegetation. The new facilities would be designed to minimize disturbance from development and visitor use. However, the introduction of heavy visitor use to this relatively pristine area of salt pan would undoubtedly result in moderate impacts from compaction. Overall, it is anticipated that the park's wildlife and vegetation would not be impaired by the implementation of this alternative, however biological surveys have not been done for this site.

D.3.d Water Resources (Pools and Runoff)

This alternative would result in the elimination of the existing Badwater visitor use area and its parking lot. As a result, no parking lot runoff would enter the Badwater pool area.

D.3.e Visitor Enjoyment

The Badwater Basin is a flat surface. The lowest recorded spot has changed its position over the years. Visitors may have the perception that the Badwater pool is the lowest spot in the Western Hemisphere in spite of the park's attempt to inform the public otherwise. Even with access to Badwater Basin at the northern site, visitors may continue to return to the Badwater pool area to visit "the lowest spot." Due to its open vistas and slightly sloping topography, this new site does not have the same feeling of being at the lowest spot that the existing site has. Under this alternative, the pool area would be without the protections to its habitat that would be offered in the proposed alternative. The selection of the northern site may cause more impact to the parks resources than the no action or the preferred action alternative.

D.3.f Wilderness

A boardwalk would be built from the parking lot out to the wilderness boundary (200 feet west from the centerline of the roadway). Although the boardwalk would tend to confine visitors to a limited area, the relatively pristine salt pan and wilderness would experience some disturbance similar to what is presently found at the Badwater pool area.

D.3.g Cumulative Impacts

The Badwater Road rehabilitation project is the only other project within the proposed action area. Noise, air emissions, and traffic congestion from the Badwater Road rehabilitation project would contribute to this proposed project's impacts. The cumulative impacts are considered to be minor.

E. Consultation and Coordination

Gordon Reetz, biologist from the Pacific West Regional office with advice and consultation from the NPS staff listed below prepared this document.

Death Valley National Park

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This document will be available to the public and comments will be accepted for a minimum of 30 days. After receiving and evaluating public comments if the Superintendent finds that the proposed action will not significantly affect the quality of the human environment a Finding of No Significant Impact (FONSI) will be prepared and forwarded to the Pacific West Regional Director for approval.

Individuals, Organizations, And Agencies Consulted:

Barbara Durham, Tribal Administrator
Dave Gedeon, Project Manager- Federal Highway Administration
Frank Grannis, Design Team Leader- Federal Highway Administration
Bruce Hendersen, U.S. Army Corps of Engineers, Ventura, California
Cindy Mitten, California Regional Water Quality Control Board

References

Sada, Donald W. 1995. Characteristics of Badwater Snail (*Assiminea infima*) Populations and Habitat, and Probable Impacts or Public Use on Populations at Badwater, Death Valley National Park, California. Report to NPS, Death Valley National Park. Contract No. 1443PX813093362.